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DRAWINGS ATTACHED

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(54) FILTER ASSEMBLIES

(71) We, C.A.V. LIMITED, a British Company, of Well Street, Birmingham, 19, do hereby declare the invention, for which we pray that a Patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to filter assemblies and has for its object to provide such an assembly in a simple and convenient form.

A filter assembly in accordance with the invention comprises in combination, a head portion having inlet and outlet connections, an annular abutment surface defined on the head portion, a filter housing defining a rim for engagement with said abutment surface so as to form a fluid tight seal therewith, a separate clip member locatable about said filter housing for engagement with said rim, said clip member and the head portion defining respectively the components of a bayonet coupling or couplings whereby the clip member can retain the filter housing in position relative to the head portion and also maintains said surface in fluid tight engagement with said rim, said head portion defining a hollow boss which forms part of the fluid flow path through the assembly, said filter housing having an opening aligned with said boss and a resilient hollow plug engaging within said boss and said opening to convey fluid therebetween.

In the accompanying drawings:

Figure 1 is a sectional side elevation of one example of a filter assembly in accordance with the invention.

Figure 2 is a side elevation of the assembly taken at right angles to the view of Figure 1.

Figure 3 is a plan view of part of the assembly, and

Figure 4 shows to enlarged scale part of the assembly seen in Figure 1.

Referring to the drawings there is provided a head portion 10 which defines an annular recessed rim 11. Moreover, formed integrally with the head portion is a mounting bracket 12 whereby the assembly can be secured to a supporting surface. Also formed in the head portion is an inlet 13 and an outlet 14 for liquid to be filtered. The inlet 13 communicates with a space 15 defined in the head portion whilst the outlet communicates with the interior of a hollow boss 16. It will be understood however that the inlet and outlet connections may be interchanged depending upon the duty which the assembly is required to carry out.

Forming part of the assembly is a filter unit 17 which comprises a hollow cylindrical can 18 having a step 19 adjacent its closed end. The step 19 supports an annular apertured support plate 20 which in turn, supports an open ended tube 21. Furthermore, disposed in the annular space defined between the tube and the can is a pleated paper filter element 22. The open end of the can 18 is closed by an annular closure plate 23 which is apertured to allow liquid to flow from the space 15 into the element, and the plate is folded over in a well known manner, the periphery of the can. Liquid flowing through the filter element passes through apertures in the support plate 20 and then flows up the tube 21 to the outlet 14. In order to establish a seal between the tube 21 and the boss 16, a resilient hollow plug 24 is provided which sealingly engages within the bores in both the tube and the boss.

The rim defined by the folded over portion of the closure plate 23 defines a curved annular sealing surface for sealing engagement with an abutment surface defined by an annular and resilient sealing ring 25 carried in the recess formed in the rim 11 of the head portion. In this manner liquid is prevented from escaping from the space 15.

In order to retain the filter unit 17 rela-

tive to the head portion 10 there is provided a clip member 26. This member is formed from a strip 27 of sheet metal which is bent to circular form, the ends of the strip being secured together by butt welding at 28. The inside diameter of the clip member is such that it can slide over the widest portion of the can 18 but nevertheless will engage with the turned down edge of the closure plate 23.

The clip member is provided with four outwardly extending lugs 29 and these each form one part of a bayonet coupling. The openings constituting the other parts of the bayonet couplings are shown in Figure 2 as though they extended right through rim 11, but in practice these will not be seen from the exterior of the assembly because they extend only part way into rim 11 from its radially innerface. The portion of each coupling in the head portion includes a circumferentially extending inclining and declining surface 30. Entrance slots 30*a* are provided to enable the lugs 29 to be engaged with the surfaces 30 and as the clip member is moved angularly the lugs 29 will ride up the inclined portions of the surfaces. During this time the sealing ring 25 is compressed and during further angular movement, the lugs 29 will move over the crests of the surfaces onto the declining portions thereof, thereby to retain the clip member and can 18 in position, the declining portions of the surfaces being limited in length to limit the extent of movement of the clip member so that the sealing ring is maintained in a state of compression sufficient to ensure an adequate seal. To facilitate angular movement of the clip member the latter is provided with outwardly extending portions 31 for engagement by the fingers of the user.

In this manner the filter element is retained in position relative to the head portion but nevertheless it can easily and quickly be removed when the need arises.

WHAT WE CLAIM IS:—

1. A filter assembly comprising in combination a head portion having inlet and outlet connections, an annular abutment surface defined on the head portion, a filter housing defining a rim for engagement with said abutment surface so as to form a fluid tight seal therewith, a separate clip member locatable about said filter housing for engagement with said rim, said clip member and the head portion defining respectively the components of a bayonet coupling or couplings whereby the clip member can retain the filter housing in position relative to the head portion and also maintains said surface in fluid tight engagement with said rim, said head portion defining a hollow boss which forms part of the fluid flow path through the assembly, said filter housing having an opening aligned with said boss and a resilient hollow plug engaging within said boss and said opening to convey fluid therebetween.

2. A filter assembly as claimed in claim 1 in which said clip member is formed from a strip of sheet metal which is bent to circular form and has its ends butt welded together, said clip member being provided with outwardly extending lugs which form components of the bayonet couplings.

3. A filter assembly as claimed in claim 2 in which the abutment surface is defined by a resilient sealing ring and the other components of the bayonet couplings each include circumferentially extending inclining and declining surfaces and a slot to permit engagement of a lug with the inclining surface, the arrangement being such that as the lugs engage the inclining surfaces the sealing ring will be compressed as the clip member is moved angularly, the extent of movement of the clip member once the lugs engage the declining surfaces being limited to ensure that the sealing ring is maintained in a state of compression sufficient to ensure an adequate seal.

4. A filter assembly comprising the combination and arrangement of parts substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

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2 SHEETS This drawing is a reproduction of the Original on a reduced scale.
SHEET 1

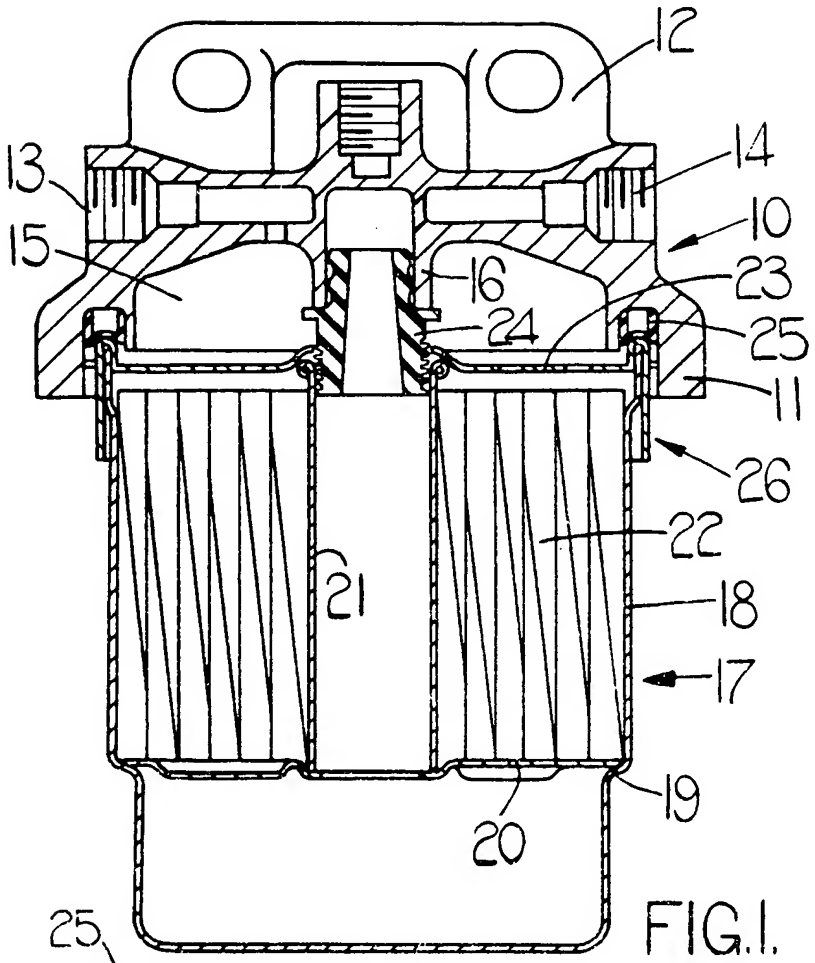

FIG.1.

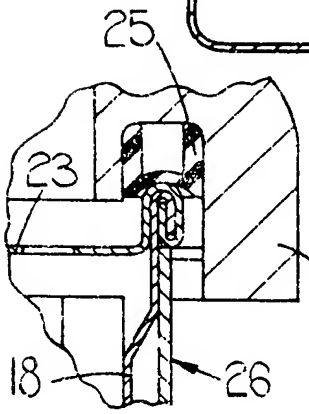

FIG.4.

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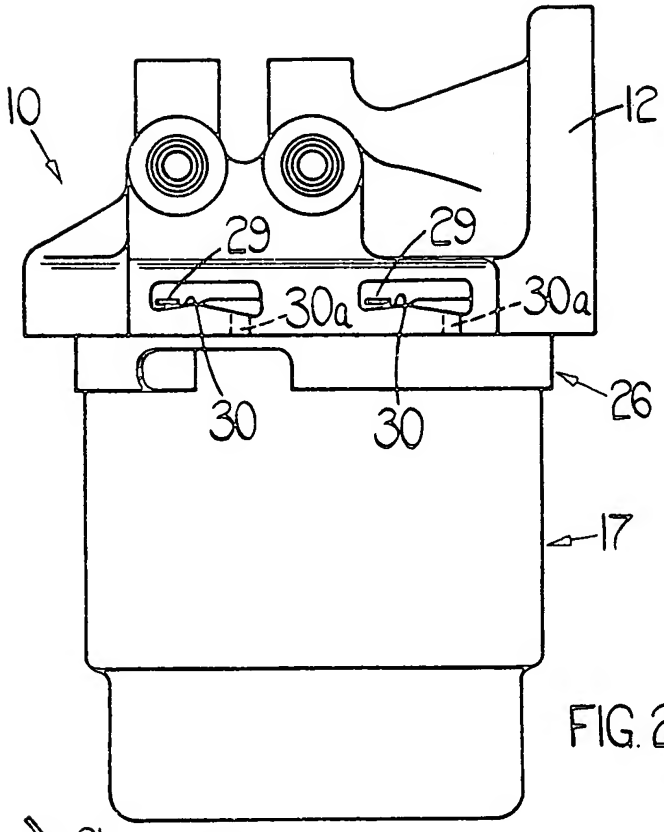

FIG. 2.

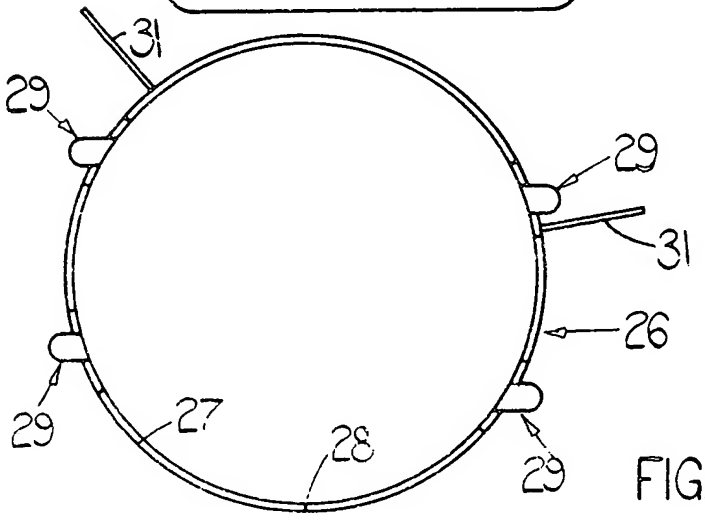

FIG. 3.